What is claimed is:

1. A two-way radio communication system for two-way communication between first and second radio stations, the two-way radio communication system comprising:

a first radio station equipped with a signal modulator for generating a modulated signal in an intermediate frequency band that is lower than a radio frequency;

a modulated transmission signal generator that produces a modulated radio transmission signal by using a local oscillation signal to up-convert the modulated signal to a radio frequency band;

a transmitter that transmits the local oscillation signal used by the modulated transmission signal generator together with the modulated radio transmission signal as a radio signal; and

a receiver that receives a radio signal from a second radio station and down-converts the received signal to a modulated frequency band by using the local oscillation signal utilized for up-conversion by the modulated transmission signal generator;

a second radio station equipped with a local oscillation signal regenerator for extracting and regenerating just a local oscillation component from among signal components received from the first radio station;

a receiver that uses a local oscillation signal regenerated by the local oscillation signal regenerator to down-convert a received modulated radio signal to an intermediate frequency band;

a signal modulator for producing a modulated signal in an intermediate frequency band that is lower than a radio frequency; and

a transmitter that uses the local oscillation signal regenerated by the local oscillation signal regenerator to up-convert to a radio frequency band a modulated signal produced by the signal modulator.

2. A two-way radio communication system for two-way communication between first and second radio stations, the two-way radio communication system comprising first and second radio stations, each of which radio stations are equipped with a signal modulator for generating a modulated signal in an intermediate frequency band that is lower than a radio frequency;

a modulated transmission signal generator that produces a modulated radio transmission signal by using a local oscillation signal to up-convert the modulated signal to a radio frequency band;

a transmitter that transmits the local oscillation signal used by the modulated transmission signal generator together with the modulated radio transmission signal as a radio signal; and

a receiver that receives a radio signal from the other radio station and down-converts the received signal to a modulated intermediate frequency band by generating a multiplication component of a modulated radio signal component and local oscillation signal component received from the other radio station.

3. A two-way radio communication system for two-way communication between first and second radio stations, the two-way radio communication system comprising:

a first radio station equipped with a signal modulator for generating a modulated signal in an intermediate frequency band that is lower than a radio frequency;

a modulated radio signal generator that uses a local oscillation signal to up-convert the modulated signal to a radio frequency band;

a transmitter that from among sideband signals generated during conversion of a modulated intermediate frequency band signal to the radio frequency band by the modulated radio signal generator, selects an upper-side-band signal as a radio signal and transmits the selected radio signal together with the local oscillation signal utilized by the modulated radio signal

generator; and

a receiver that receives a radio signal from the second radio station and down-converts the received signal to a modulated intermediate frequency band by generating a multiplication component of a modulated radio signal component and local oscillation signal component received from the other radio station;

a second radio station equipped with a signal modulator for generating a modulated signal in an intermediate frequency band that is lower than a radio frequency;

a modulated radio signal generator that uses a local oscillation signal to up-convert the modulated signal to a radio frequency band;

a transmitter that from among sideband signals generated during conversion of a modulated intermediate frequency band signal to the radio frequency band by the modulated radio signal generator, selects a lower-side-band signal as a radio signal and transmits the selected radio signal together with the local oscillation signal utilized by the modulated radio signal generator; and

a receiver that receives a radio signal from the first radio station and down-converts the received signal to a modulated intermediate frequency band by generating a multiplication component of a modulated radio signal component and local oscillation signal component received from the first radio station.

4. A two-way radio communication method for conducting two-way communication between first and second radio stations, the two-way radio communication method comprising:

a first radio station that transmits a radio signal to a second radio station by generating a modulated signal in an intermediate frequency band that is lower than a radio frequency, producing a modulated radio transmission signal, using a local oscillation signal to up-convert the modulated signal to a radio

frequency band and transmitting the local oscillation signal used by the modulated radio transmission signal with the modulated radio transmission signal as a radio signal; and when receiving a radio signal from the second radio station, down-converts the received signal to a modulated frequency band by using the local oscillation signal utilized for up-conversion; and

a second radio station that extracts and regenerates local oscillation components from among signal components received from the first radio station, uses a local oscillation signal thus regenerated to down-convert a received modulated radio signal to an intermediate frequency band and, when transmitting a radio signal to the first radio station, produces a modulated signal in an intermediate frequency band that is lower than a radio frequency, and uses the regenerated local oscillation signal to up-convert to a radio frequency band a modulated signal produced by the signal modulator.

5. A two-way radio communication method for conducting two-way communication between first and second radio stations, the two-way radio communication method comprising first and second radio stations that in a case of mutual transmission of radio signals between the stations, each generate a modulated signal in an intermediate frequency band that is lower than a radio frequency, produce a modulated radio transmission signal, use a local oscillation signal to up-convert the modulated signal to a radio frequency band and transmit the local oscillation signal used by the modulated radio transmission signal with the modulated radio transmission signal as a radio signal; and when a radio signal is received from the other radio station, down-convert the received signal to a modulated intermediate frequency band by generating a multiplication component of a received modulated radio signal component and local oscillation signal component.

6. A two-way radio communication method for conducting two-way communication between first and second radio stations, the two-way radio

communication method comprising transmission by a first radio station of a radio signal to a second radio station by generating a modulated signal in an intermediate frequency band that is lower than a radio frequency, producing a modulated radio transmission signal, using a local oscillation signal to up-convert the modulated signal to a radio frequency band and transmitting the local oscillation signal used by the modulated radio transmission signal with the modulated radio transmission signal as a radio signal; and when receiving a radio signal from the second radio station, down-converts the received signal to a modulated frequency band by using the local oscillation signal utilized for up-conversion and, of sideband signals generated during conversion of a modulated intermediate frequency band signal to the radio frequency band, selects an upper-side-band radio signal and transmits the selected radio signal together with the local oscillation signal utilized by a modulated radio signal generator, and when a radio signal is received from the other radio station, down-converts the received signal to a modulated intermediate frequency band by generating a multiplication component of a received modulated radio signal component and local oscillation signal component; and transmission to the first radio station by a second radio station, generating a modulated signal in an intermediate frequency band that is lower than a radio frequency, producing a modulated radio transmission signal, using a local oscillation signal to up-convert the modulated signal to a radio frequency band and, of sideband signals generated during conversion of a modulated intermediate frequency band signal to the radio frequency band by the modulated radio signal generator, selecting a lower-side-band radio signal and transmitting the selected radio signal together with the local oscillation signal, and when a radio signal is received from the first radio station, down-converting the received signal to a modulated intermediate frequency band by generating a multiplication component of a received modulated radio signal component and local oscillation signal component.